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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,977	06/07/2001	Yukio Nishimura	5988-031-27	5980

7590

03/19/2003

Supervisor, Patent Prosecution Services
PIPER MARBURY RUDNICK & WOLFE LLP
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Washington, DC 20036-2412

EXAMINER

ASHTON, ROSEMARY E

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/874,977

Applicant(s)

NISHIMURA ET AL.

Examiner

Rosemary E. Ashton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 6, 8 and 19 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7 and 9-18 is/are rejected.
- 7) ☒ Claim(s) 3 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

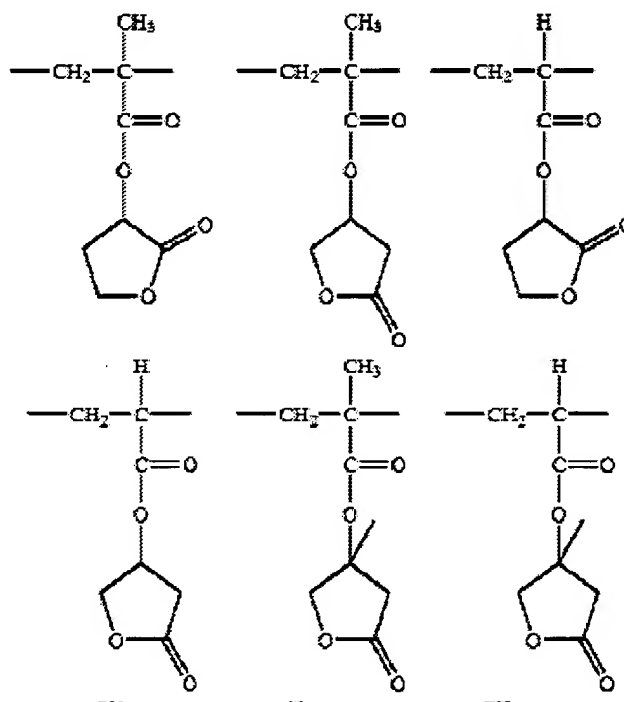
- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

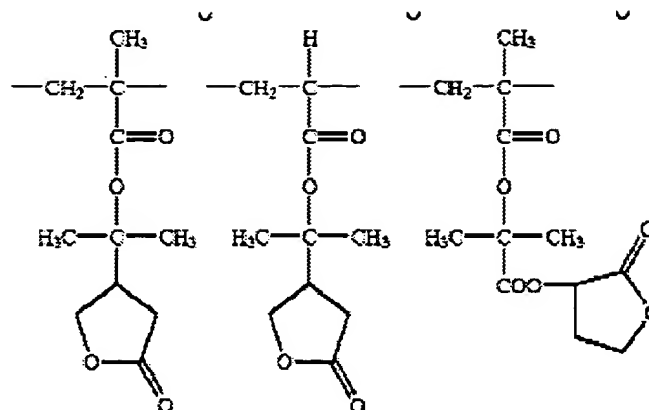
1. Claims 1,2,7,11-14,16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. U.S. Patent Application Publication No. US 2002/0098440 A1 for application no 09/492,848 filed January 27, 2000.

Sato teaches a photoresist composition comprising a polymer, a photoacid generator and a solvent such as PGMEA. The polymer has lactone groups as shown in section 75 below:



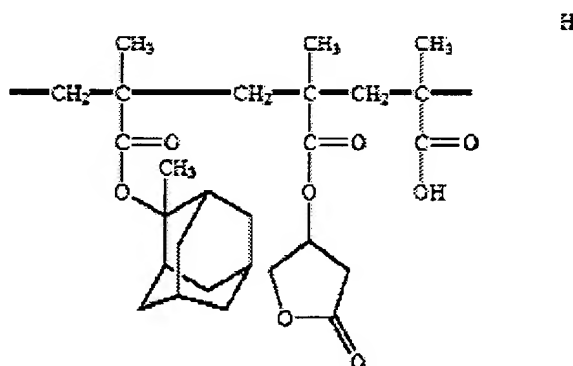
section 75: Rows 1 and 2

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section 75: Row 3

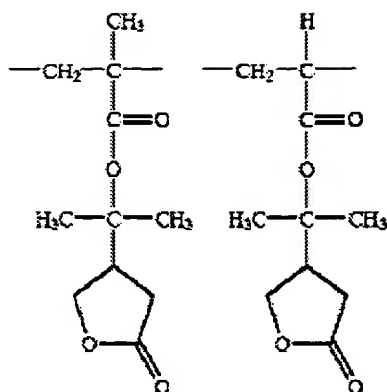
The first two lactones in the third row meet the limitations of formulas 1 and 2 in applicant's claims 1 and 2.

In section 92 Sato exemplifies polymers A-I for the photoresist wherein each polymer has a lactone methacrylate monomer, an alicyclic methacrylate monomer and methacrylic acid. The lactone monomers in Polymers A-I have the formulas in the first two rows above, such as polymer H shown below:



It would have been obvious to one of ordinary skill in the art to use a monomer, such as one of the two monomers below,

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in the polymer for the lactone methacrylate monomer in Polymer H with a reasonable expectation of obtaining a polymer for a photoresist composition having excellent sensitivity to short wavelength light because Sato teaches the monomers are equivalent in the polymer and thus are interchangeable in the polymer.

The amount of lactone monomer in the polymer is 20 mol % to 70 mol % as in claim 7 (section 94) and Table 2 shows the molecular weight of the polymers to be in the range of claim 11, i.e. polymer H has a Mw of 8,900.

As shown in Table 2 the polymer is mixed with PAG-1 which is the onium salt triphenylsulfonium triflate (section 132) as in claim 12 and in sections 106-109 Sato teaches using nitrogen organic compounds well known in the art to act as acid diffusion control agents as in claims 13 and 14. The resist composition also comprises PGMEA as in claim 16.

As shown above polymer H has an alicyclic adamantly methacrylate monomer as in claims 17 and 18.

2. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al cited above in view of Chang et al. U.S. patent no. 6,265,131 cited in the prior office action.

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In section 101 Sato teaches the resist composition may comprise an acid-decomposable dissolution inhibitor (DI), however, it does not teach the DI is an alicyclic compound.

In col. 2, formula (I) Chang teaches an alicyclic compound acting as a DI in a chemically amplified photoresist composition.

It would have been obvious to one of ordinary skill in the art to add the DI taught in Chang to the resist composition of Sato with a reasonable expectation of obtaining a successful photoresist composition with improved resolution because Sato teaches the composition may comprise a DI and Chang teaches the DI provides high resolution and high sensitivity to a chemically amplified photoresist composition.

Claim Rejections - 35 USC § 112

3. Claims 9 and 10 recite the limitation "formulas 8-10" in the claims. There is insufficient antecedent basis for this limitation in the claim. Claims 9 and 10 are dependent on claims 2 and 5, respectively, however none of the claims recite formulas 8-10 except for claims 4 and 6.

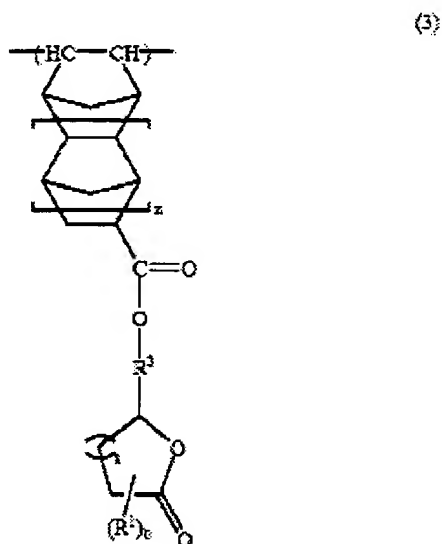
Allowable Subject Matter

4. Claims 3,4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:
The prior art does not teach the addition of the monomers in claims 3 and 4 to the lactone (me)acrylates to form a photoresist polymer.

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6. Claims 5,6,8,19 are allowed. The following is an examiner's statement of reasons for allowance: The prior art does not teach a photoresist composition comprising a polymer having the monomer shown below:



Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 308-2057. The examiner works a flexible work schedule and can normally be reached M-F between 10:00 am and 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.



Rosemary E. Ashton
Primary Examiner
Art Unit 1752

rea
March 14, 2003

**ROSEMARY ASHTON
PRIMARY EXAMINER**